

UNITED STATES MARINE CORPS  
Logistics Operations School  
Marine Corps Combat Service Support Schools  
PSC Box 20041  
Camp Lejeune, North Carolina 28542-0041

LOC 1109

**STUDENT OUTLINE**

**MOTOR TRANSPORT AND ENGINEER EQUIPMENT CHARACTERISTICS**

**LEARNING OBJECTIVES**

1. **Terminal Learning Objectives:**

a. Given the references and a requirement to operate a garrison motor pool, operate a garrison motor pool, to ensure operational support requirements are met per the references.

b. Given the requirement to provide general engineering support, commander's guidance, the concept of combat service support, and the references, coordinate general engineering support, to ensure engineering requirements are incorporated in the combat service support (CSS) plan.

2. **Enabling Learning Objectives:**

a. Given the references and a requirement to direct the operation of a garrison motor pool, identify characteristics of motor transport equipment, per the references.

b. Given the references, commander's guidance, the concept of combat service support (CSS), and a written test, identify the engineering equipment characteristics, per the references.

**OUTLINE**

1. **GENERAL:** In order to provide the most effective and efficient support logisticians must be knowledgeable about the capabilities and limitations of motor transport and engineer equipment. This class will identify key characteristics you should be familiar with.

2. **HIGH MOBILITY, MULTI-PURPOSE, WHEELED VEHICLES (HMMWV)**

a. **D1158 1-1/4 TON UTILITY TRUCK.** The D1158 HMMWV is the base-line 1-1/4 ton, 4-wheel drive, diesel-fueled vehicle in the Marine Corps inventory. It is used to transport equipment and up to eight personnel. With a high power to weight ratio, four-wheel drive, and high ground clearance, the HMMWV has high cross-country mobility. The difference between the M998 and M1038 models is the addition of an 8,000-pound capacity electric winch on the front bumper of the M1038. There are two trailers generally used with the HMMWV.

(1) **D0850/D0085 ¾ TON TRAILER M101A2/M116A2.** Both trailers are single axle, general-purpose trailers. The D0850, M101A2, is fitted with a cargo body and is used to transport general cargo at the unit level. The D0085, M116A2, is the same trailer without the cargo body. Its primary use is in hauling mounted generators.

b. **D1159 ARMAMENT CARRIER HMMWV.** The armament HMMWV is a model of the 1-1/4 ton truck. It is intended to be used as a weapons platform for the M2 .50 caliber machine gun and the MK19 40mm machinegun. It has seating for the driver and 3 passengers. The turret revolves a full 360°. The difference between the M1043 and M1044 models is the addition of an 8,000-pound capacity electric winch on the front bumper of the M1044.

c. **D1125 TOW CARRIER HMMWV.** The TOW Carrier model of HMMWV is intended to be used as a weapons platform for the Tube Launched, Optically-Tracked, Wire-Guided (TOW) missile. It has seating for the driver and 3 passengers and stowage space for six missiles. The turret revolution with mounted TOW is limited to 300° left or right of centerline. The difference between the M1045 and M1046 models is the addition of an 8,000-pound capacity electric winch on the front bumper of the M1046.

d. **D1001 AMBULANCE HMMWV, ARMORED, M997.** The Ambulance HMMWV is capable of transporting four litter patients, eight ambulatory patients or a combination of litter and ambulatory patients. The vehicle is heated and air conditioned as well as being equipped with a Gas-Particulate Filter Unit enabling continued operation in NBC environments.

e. **D1002 AMBULANCE HMMWV, SOFT TOP, M1035.** The D1002 is an ambulance variant of the 1-1/4 ton HMMWV. This vehicle is capable of transporting two litter patients.

### 3. **6X6 5-TON TRUCK**

a. **D1059 5-TON TRUCK, CARGO.** The 5-ton truck is the Marine Corps' standard medium lift vehicle. It is used to transport equipment and personnel. The versatile ISO bed with drop-down sides, removable bows and canvas, troop seats and hinged rear gate allows for transportation of quadcon containers or up to 20 personnel. M813 models have a 5-speed manual transmission while the M923 model has a 5-speed automatic transmission. There are three trailers widely pulled by the 5-ton.

(1) **D0080 3-1/2-TON GENERAL PURPOSE TRAILER, M353.** This is a single axle, heavy-duty trailer designed to haul payloads up to 7,000 pounds. Generally generators, air compressors, and welders are mounted to this trailer.

(2) **D0860 1-1/2 TON CARGO TRAILER M105A2.** The D0860 is a single axle trailer with a leaf-spring suspension. It has a welded box cargo body mounted to the frame and is used for transportation of cargo and ammunition.

(3) **D0880 400-GALLON WATER TANK TRAILER, M149A2.** The water tank trailer is used to transport potable water and consists of a double walled stainless steel tank containing 2 inches of urethane foam for insulation. It is equipped with dispensing equipment consisting of four bronze faucets, a rear self-drain faucet and brass piping. The tank is filled through a manhole located on top of the tank.

b. **D1072 5-TON TRUCK, DUMP, M817/M929A2/M930A2.** The 5-ton dump is used to transport various materials and has a load capacity of up to 20,000 pounds on the highway and 10,000 pounds cross-country. Fully loaded, it can tow an additional 30,000 pounds highway and 15,000 pounds off-road. The dump truck is equipped with dual fuel tanks, which extend its range up to 480 miles depending on the model. The dump bed can operate as a regular rocker type or spreader type by placing the tailgate into various positions. There are three models of the dump truck. The M817s are manual transmission and the M929A2 and M930A2 are

automatic transmission. Like the HMMWV the model numbers vary depending on whether or not the truck is fitted with a winch.

c. D1212 5-TON TRUCK, WRECKER, M816/M936A2. A variant of the M816 or M936 5-ton, the wrecker is used to return disabled trucks for repair and to free mired trucks. It is equipped with a hydraulically powered, engine driven crane, and drive shaft driven front and rear winch. The crane can lift loads of up to 20,000 pounds and can be used to remove and replace engines, power packs, and gun tubes.

#### 4. LOGISTICS VEHICLE SYSTEM (LVS)

a. D0209 LOGISTICS VEHICLE SYSTEM (LVS) POWER UNIT, MK48. The MK48 and its associated trailers form the LVS. They are used primarily by combat service support motor transport units to haul supplies in large quantities from beachheads, ports, railheads, or airfields to combat service support areas. They are the heavy lift capacity within the Marine Corps. The MK48's low profile, cab-forward configuration permits loading aboard military aircraft with no preparation. The MK48 is designed to power LVS trailer units through an articulation joint forming an integral, dual-body, fully articulated, cross-country mobile unit. The common trailer units are:

(1) D0876 POWERED, 22-1/4 TON, CONTAINER HAULER, MK14. The MK14's primary mission is to transport ISO containers, standardized cargo, and shelters. Each trailer can carry 3 quadcons or six sixcons.

(2) D0879 POWERED, 20 TON, DROPSIDE CARGO HAULER, WITH CRANE, MK17. The cargo-carrying variant of the LVS is used to transport palletized cargo and ISO containers. The trailer is equipped with troop seats and drop-down sides. A Material Handling Crane allows self-loading.

(3) D0235 LOW BED, 40 TON, CONSTRUCTION EQUIPMENT TRANSPORTER, M870/M870A1. The M870, in either model, is a 6-wheeled, tandem axle, dual-tire semitrailer with a heavy-duty steel frame and flat wooden cargo bed. The low bed is often called a Heavy Equipment Trailer (HET) and can transport loads up to 40 tons cross country at 20 mph or on highways at 40 mph. The M870A1 cannot be loaded or unloaded from the rear as can the M870. The gooseneck of either trailer drops down to form a ramp.

(4) **D0881 POWERED, RIBBON BRIDGE/CONTAINER HAULER, MK18.** This trailer is a modified container hauler with a lifting gear assembly mounted at the rear and a winch assembly mounted on the front of a split/pivotal bed. This trailer is capable of self-loading and unloading the Ribbon Bridge Set and ISO containers through the use of hydraulic cylinders, pulleys and winches.

(5) **D0877 POWERED WRECKER/RECOVERY TRAILER, MK15.** The MK15 is used for recovery of all LVS vehicles and disabled Material Handling Equipment (MHE). Lifting vehicles is accomplished by an A-frame attached to the rear of the MK15. A heavy-duty rear winch enables the wrecker to free mired vehicles. The wrecker is also equipped with a Material Handling Crane (MHC) used for removing power packs, loading equipment and ISO containers. An auxiliary hydraulic circuit on the vehicle provides power for tools and can be used to provide another trailer with hydraulics. The crane and A-frame can be operated by remote control from a distance.

**5. UTILITIES.** One of the three subsections of engineering equipment is utilities. This set includes air conditioners, shower and laundry units, generators and light sets, water and fuel pumps and purification units, and water and fuel storage tanks.

a. **B00XX AIR CONDITIONER, VARIOUS.** The Marine Corps uses a variety of different air conditioning units depending on the size and type of enclosure being cooled. All of these units have common qualities. They are self-contained air-cooled electric motor driven and designed for continuous operation under varying load conditions. They are primarily used in van and tent type enclosures for providing filtered, conditioned, cooled, or heated air to maintain service conditions necessary for the efficient operation of electronic equipment.

b. **B0055 BATH, SHOWER UNIT.** This unit consists of six separate but identical and interchangeable shower modules, with interconnecting hoses, electric feed water and drain pumps, and a drain hose. The modules can be connected together in any quantity desired. The M-80 Water Heater, supplied with the unit, is a self-contained, oil-fired boiler capable of providing 120° water at 20 gallons per minute.

c. **B1226 LAUNDRY UNIT.** The laundry unit is a pallet-mounted, self-contained unit consisting of a washer, dryer, extractor, and air compressor. The M-80 Water Heater, supplied with the laundry unit, is a self-contained oil-fired boiler capable of providing 120° water at a rate of 20 gallons per minute. This unit provides the capability to launder all washable fabrics worn by individual Marines and flat bulky organizational items with a maximum output of 120 pounds per hour.

d. **B0570/B0571 DRUM, FABRIC, COLLAPSIBLE, FUEL/WATER.** These drums are used to store and transport 500 gallons of fuel and water respectively. When filled they are cylindrical in shape and can be towed, lifted, or air dropped.

e. **B0730/B0891/B09XX/B10XX GENERATOR SET, VARIOUS.** The family of generators in use by the Marine Corps shares common characteristics. They are commonly referred to as MEPs, for Mobile Electric Power and include the MEP-016B, MEP-003A, MEP-112A, MEP-005A, MEP-114A, MEP-115A, MEP-006A, and MEP-007A. All generators are driven by air-cooled diesel engines. The output of the generators varies by size. Their mission is to provide power to lighting, air conditioners, or electronic equipment sets.

f. **B1580/B2085 PUMP/STORAGE MODULE, FUEL (SIXCON).** The fuel sixcon modules consist of B1580, the pump module, and B2085, the storage modules. Together the system provides the capability to store, transport, and pump up to 4,500 gallons. The pump is a component of the set consisting of five fuel storage modules and the pump module. The six modules attach together to form an ISO sized container (8x8x20) and can be lifted by helicopter or transported by truck or container ship. One ISO-sized set can be transported on each D0876, MK14, LVS trailer. However, consideration must be given to the amount of weight carried as well as the cube.

g. **B1581/B2086 PUMP/STORAGE MODULE, WATER (SIXCON).** The water sixcon modules consist of B1581, the pump module, and B2086, the storage modules. Together the system provides the capability to store, transport, and pump up to 4,500 gallons at 125 gallons per hour. The pump is a component of the set consisting of five fuel storage modules and the pump module. The six modules attach

together to form an ISO sized container (8x8x20) and can be lifted by helicopter or transported by truck or container ship. One ISO-sized set can be transported on each D0876, MK14, LVS trailer. However, consideration must be given to the amount of weight carried as well as the cube.

h. **B2130 TANK, FABRIC, COLLAPSIBLE, 3,000 GALLON.** The collapsible water tank, referred to as an onionskin, is designed for easy erection in the field. It serves as a temporary water storage facility.

i. **B2604 REVERSE OSMOSIS WATER PURIFICATION UNIT (ROWPU).** The ROWPU is a portable water purification unit capable of purifying water from almost any shallow well, deep well, or surface water raw water source. The unit is capable of removing NBC contaminants, minerals, and biological, impurities as well as desalinating seawater. The system can purify 600 gallons per hour and requires a 30 Kw, MEP-005A generator.

6. **MATERIALS HANDLING EQUIPMENT (MHE).** The Marine Corps uses the description of MHE to encompass all types of forklifts and other equipment whose primary use is lifting containers and equipment.

a. **B0391 CONTAINER HANDLER.** The Container Handler is commonly referred to as the RTCH or Rough Terrain Container Handler. It is a diesel powered, all-wheel drive, articulated steer ISO container handler with a lift capacity of 50,000 pounds. It has a fording capacity of 60 inches.

b. **B2561 TRUCK, FORKLIFT, EXTENDED BOOM (EBFL).** The EBFL is a diesel powered, four-wheel drive, and rubber-tired forklift with two-wheel, four-wheel, and crab steering. The EBFL is capable of moving all palletized material up to the forklift's rated capacity of 10,000 pounds. Its primary mission is unloading ISO containers using its extended boom to reach inside the containers.

c. **B2566 TRUCK, FORKLIFT, ROUGH TERRAIN.** Commonly called the 4k, for its lifting capacity of 4000 pounds, this forklift is self-propelled, four-wheel drive, rubber-tired, diesel-powered, with a modified mast and enhanced side shift capability. It is air transportable. Its primary function is to load and unload containers and

serves as an auxiliary mover for the M-198 howitzer with a pintle hook attachment.

d. **B2567 TRACTOR, RUBBER-TIRED, ARTICULATED STEERING, MULTI-PURPOSE (TRAM)**. The TRAM is a diesel-powered, four-wheel drive, rubber-tired, articulated steering tractor capable of operating in rough terrain and in 60 inches of water. The TRAM can be outfitted with a bucket or forklift attachments. Its capacity is 10,000 pounds.

7. **HEAVY EQUIPMENT (HE)**. Heavy Equipment relates to any type of bulldozer, grader, crane, or tractor.

a. **B0443 CRANE, HIGH SPEED, HIGH MOBILITY**. This is a diesel-powered, rubber-tired crane with a hydraulic boom. It is capable of all general crane operations, clamshell, container handling, and general lift up to 50,000 lbs. It can operate in 60 inches of water. The attachments include concrete and clam shell buckets. A second model of the B0443 includes a pile driver attachment.

b. **B0446 AIR MOBILE CRANE, ROUGH TERAIRN, HYDRALIC, LIGHT**. The light crane is similar to the B0443 with the following differences. Its size allows for air transportation and its maximum lifting capability is 7.5 tons.

c. **B0589 EXCAVATOR, COMBAT, M9 ARMORED COMBAT EARTHMOVER (ACE)**. The ACE is a highly mobile, full-tracked, armored earthmover capable of supporting the maneuver element in offensive and defensive operations. It accomplishes critical combat engineer tasks such as preparing hull defilade fighting positions for guns and tanks. Additionally, it can prepare roads, remove roadblocks, and prepare access routes at water obstacles. The ACE is used in countermobility operations to dig antitank ditches. The ACE requires one operator, travels at 30 mph on land, and swims at 3 mph. The excavator is transportable by air and sea.

d. **B1082 MOTORIZED ROAD GRADER**. The grader is a self-propelled grading machine powered by a diesel engine. It is rubber-tired, four-wheel drive, and has an articulated frame and front wheel steer design. The primary use is for building and maintaining roads and airfields.



e. **B2462 TRACTOR, MEDIUM, FULL TRACKED.** Commonly called the D7 dozer, this tractor is used for earthmoving and general construction.

f. **B2482 TRACTOR, ALL WHEEL DRIVE.** This is a lightweight rubber-tired, diesel powered, tractor equipped with a front-end loader and backhoe excavator. It is capable of rapidly excavating a variety of holes, pits, trenches, and earthworks. It is equipped with on-board hydraulic tools, i.e., chainsaw, pavement breaker, and impact wrench. It is transportable by both helicopter and aircraft.

**REFERENCES:**

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| 1. Technical Characteristics<br>of USMC Engineer Equipment | TM 11275-15/3C |
| 2. Motor Transport technical<br>Characteristics            | TM 11240-15/4B |